

PU3220, PU4220, PU4520

Silicon NPN Epitaxial Planar Darlington Type

Power Amplifier, Switching

Complementary Pair with PU3120, PU4120, PU4420

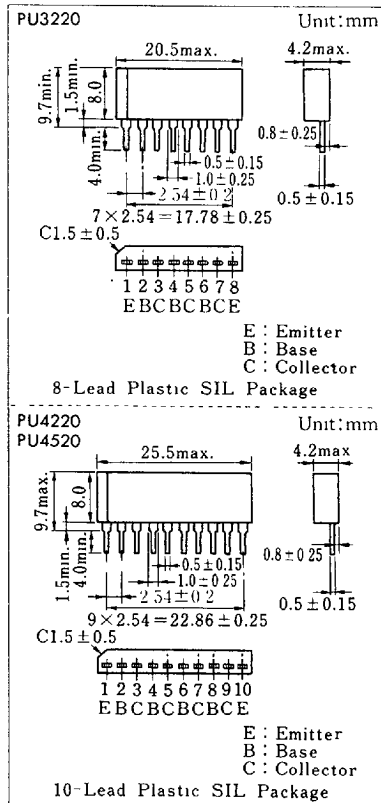
■ Features

- High DC current gain (h_{FE})
- High speed switching
- PU3220: 3 NPN elements
- PU4220: 4 NPN elements
- PU4520: 2 NPN elements (4 elements in total)

■ Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)

Item	Symbol	Value	Unit
Collector-base voltage	V_{CB0}	-60	V
Collector-emitter voltage	V_{CE0}	-60	V
Emitter-base voltage	V_{EB0}	-5	V
Peak collector current	I_{CP}	-8	A
Collector current	I_C	-4	A
Power dissipation	P_D	15	W
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 ~ +150	$^\circ\text{C}$

■ Package Dimensions



■ Electrical Characteristics ($T_c=25^\circ\text{C}$)

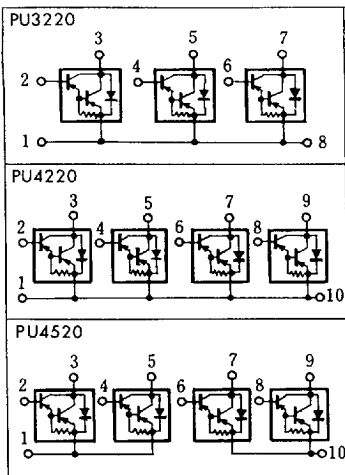
Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CB0}	$V_{CB} = -60\text{V}, I_E = 0$			-200	μA
	I_{CE0}	$V_{CE} = -30\text{V}, I_B = 0$			-500	μA
Emitter cutoff current	I_{EB0}	$V_{EB} = -5\text{V}, I_C = 0$			-2	mA
Collector-emitter voltage	V_{CE0}	$I_C = -30\text{mA}, I_B = 0$	-60			V
DC current gain	h_{FE1}	$V_{CE} = -3\text{V}, I_C = -0.5\text{A}$	1000			
	h_{FE2}^*	$V_{CE} = -3\text{V}, I_C = -3\text{A}$	1000		10000	
Base-emitter voltage	V_{BE}	$V_{CE} = -3\text{V}, I_C = -3\text{A}$			-2.5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -3\text{A}, I_B = -12\text{mA}$			-2	V
Transition frequency	f_T	$V_{CE} = -10\text{V}, I_C = -0.5\text{A}, f = 1\text{MHz}$		15		MHz
Turn-on time	t_{on}	$I_C = -3\text{A}, I_{B1} = -12\text{mA}, I_{B2} = 12\text{mA}$		0.3		μs
Storage time	t_{stg}			2		μs
Fall time	t_f			0.5		μs

* h_{FE2} Classifications

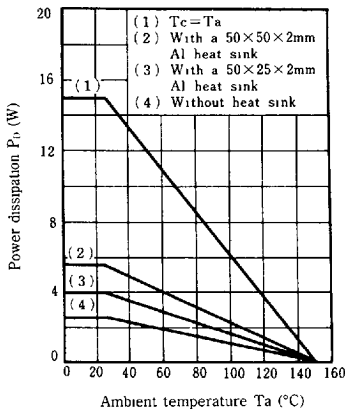
Class	Free	Q	P
h_{FE2}	1000 ~ 10000	1000 ~ 5000	2000 ~ 10000

6932852 0017034 548

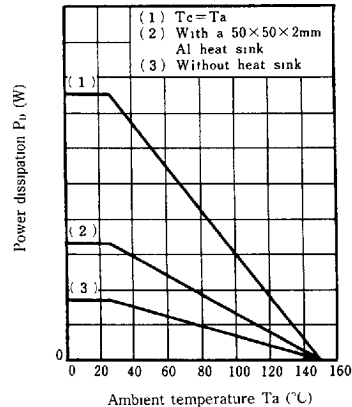
Inner Circuit



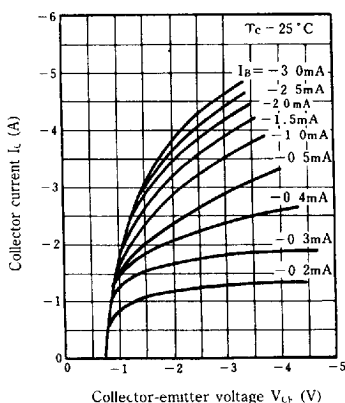
$P_D - T_a$ (PU3220)



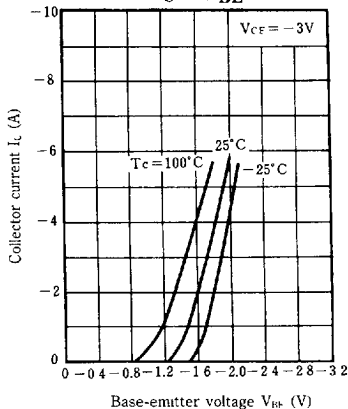
$P_D - T_a$ (PU4220, PU4520)



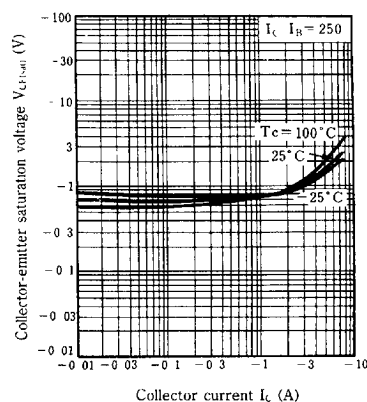
$I_C - V_{CE}$



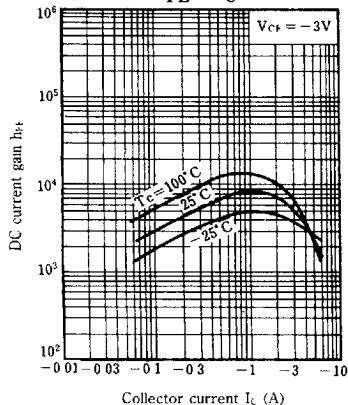
$I_C - V_{BE}$



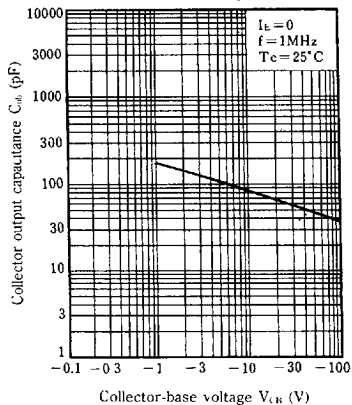
$V_{CE(sat)} - I_C$



$h_{FE} - I_C$



$C_{ob} - V_{CB}$



Area of safe operation (ASO)

